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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,119	04/20/2001	Adolf Schafer-Sindlinger	33766W026	8727

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EXAMINER

STRICKLAND, JONAS N

ART UNIT

PAPER NUMBER

1754

DATE MAILED: 03/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/838,119

Applicant(s)

SCHAFFER-SINDLINGER ET AL.

Examiner

Jonas N Strickland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 13-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-12 are, drawn to a process for reducing nitrogen oxides, classified in class 423, subclass 239.1.
 - II. Claims 13-16 are, drawn to a catalyst, classified in class 502, subclass 77.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the process for reducing nitrogen oxides can be practiced with another materially different catalyst that does not require a zirconium oxide binder.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and different search, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Sylvia Chu on 3/5/03 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-12. Affirmation of this election must be made by applicant in replying to this Office action. Claims 13-16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1, 6-8, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andreasson et al. (WO 99/39809).

Applicant claims a process for reducing nitrogen oxides present in a lean exhaust gas from an internal combustion engine by selective catalytic reduction on a reduction catalyst using ammonia, comprising oxidizing some of the nitrogen monoxide present in the exhaust gas to nitrogen dioxide so that the exhaust gas contains 30 to 70-vol.% of nitrogen dioxide before contact with the reduction catalyst, wherein the reduction catalyst comprises a zeolite exchanged with a transition metal.

Andreasson et al. discloses a system for the reduction of nitrogen oxides in exhaust gases, which incorporates an oxidation catalyst to convert at least a portion of nitrogen monoxide present in the exhaust gas to nitrogen dioxide, a source of reductant such as ammonia and a SCR catalyst (see abstract). Andreasson et al. continues to disclose wherein the SCR catalyst is comprised of a transition metal/zeolite SCR catalyst (p. 2, lines 20-21). Andreasson et al. continues to disclose wherein the oxidation catalyst may be Pt on aluminum oxide deposited on a honeycomb carrier, with respect to claims 6-8 (p. 2, lines 26-30).

Therefore, since Andreasson et al. discloses a system for the reduction of nitrogen oxides in exhaust gases, which incorporates an oxidation catalyst to convert at least a portion of nitrogen monoxide present in the exhaust gas to nitrogen dioxide, a source of reductant such as ammonia and a SCR catalyst, it would have been obvious

to one of ordinary skill in the art to expect the exhaust gas to contain 30 to 70 vol.% of nitrogen dioxide before contact with the reduction catalyst, since Andreasson et al. discloses wherein the oxidation catalyst is comprised of platinum on aluminum oxide, deposited on a honeycomb substrate.

Furthermore, with respect to claims 10-12, it would have been obvious to one of ordinary skill in the art to expect the ammonia required for SCR to be obtained from a compound, which can be hydrolyzed to give ammonia, since Andreasson et al. discloses wherein the reductant may include urea and ammonium carbamate (p. 3, lines 12-15).

10. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andreasson et al. (WO 99/39809) as applied to claims 1, 6-8, and 10-12 above, and further in view of Audeh et al. (WO 96/01689).

Applicant claims with respect to claims 2-5, wherein the transition metal is selected from the group consisting of vanadium, chromium, iron, nickel, copper, cerium, praseodymium, terbium and mixtures thereof, as well as the reduction catalyst comprised of a zeolite and another member. Andreasson et al. discloses wherein the SCR catalyst is comprised of a transition metal/zeolite SCR catalyst (p. 2, lines 20-21), but does not disclose the transition metal.

However, Audeh et al. teaches a catalyst for the treatment of exhaust gas containing nitrogen oxides. The catalyst is comprised of a zeolite that has been modified to contain iron (see abstract and p. 7, lines 13-30). The zeolite is comprised of a ZSM-5 zeolite (see Example 2, p. 14).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Andreasson et al. in view of the teachings of Audeh et al., by using a transition metal/zeolite SCR catalyst comprised of iron containing ZSM-5 for the reduction of nitrogen oxides. Such modification would have been obvious to one of ordinary skill in the art, because one of ordinary skill in the art, would have expected a reduction catalyst comprised of iron with a ZSM-5 zeolite for the reduction of nitrogen oxides to be similarly useful and applicable to a process for reducing nitrogen oxides, which includes a catalyst comprised of a transition metal/zeolite SCR catalyst as disclosed by Andreasson et al.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andreasson et al. (WO 99/39809) as applied to claims 1, 6-8, and 10-12 above, and further in view of Vogtlin et al. (US Patent 5,711,147).

Applicant claims with respect to claim 9, wherein the oxidation of the nitrogen monoxide present in the exhaust gas takes place with an electrical gas discharge. Andreasson et al. does not teach using an electrical gas discharge.

However, Vogtlin et al. teaches a selective catalytic reduction process to enhance nitrogen oxide reduction, wherein the oxidation of nitrogen monoxide is carried out with an electrical oxidizer (col. 7, lines 40-43). Vogtlin et al. also teaches wherein electrical power is provided for the oxidation of nitrogen monoxide (col. 7, lines 31-33).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Andreasson et al., which teaches a process for reducing nitrogen oxides, with the teachings of Vogtlin et al., which also teaches a process for reducing

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nitrogen oxides, wherein the oxidation of nitrogen monoxide takes place with electrical power. Such modification would have been obvious to one of ordinary skill in the art, because one of ordinary skill in the art, would have expected the process for reducing nitrogen oxides from exhaust gas as taught by Vogtlin et al., to be similarly useful and applicable to the process for reducing nitrogen oxides as taught by Andreasson et al.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USP 4,778,665; USP 4,961,917; USP 5,116,586; USP 5,451,387; USP 5,482,692.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonas N Strickland whose telephone number is 703-306-5692. The examiner can normally be reached on M-TH. 7:30-5:00, off 1st Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0661.

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JS
Jonas N. Strickland
March 5, 2003

Wayne A. Langel
WAYNE A. LANGEL
PRIMARY EXAMINER